

In the Claims:

The following claim listing will replace all previous claim listings:

1-9. (Cancelled)

~~10.~~¹ (Previously Presented) A modulation system comprising:

a quadrature modulator that modulates in-phase and quadrature-phase signals to produce a modulated signal;

a phase tracking subsystem that is responsive to the quadrature modulator to produce a phase signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal;

an amplitude tracking subsystem that is responsive to the quadrature modulator to produce an amplitude signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal; and

an amplifier having a signal input, an amplitude control input and an output, wherein the signal input is responsive to the phase signal and the amplitude control input is responsive to the amplitude signal;

wherein the phase tracking subsystem comprises a phase locked loop that includes a controlled oscillator having a controlled oscillator input, a controlled oscillator output that produces the phase signal and a feedback loop between the controlled oscillator input and the controlled oscillator output, the feedback loop including a mixer that is responsive to a local oscillator, and wherein the quadrature modulator is included within the feedback loop between the controlled oscillator output and the mixer, between the local oscillator and the mixer, or between the mixer and the controlled oscillator input.

11. (Cancelled)

~~12.~~² (Original) A system according to Claim ~~10~~¹ wherein the amplitude tracking subsystem comprises an automatic gain control subsystem that is responsive to the modulated signal to produce the amplitude signal.

~~13.~~⁷ (Previously Presented) A modulation system comprising:

a quadrature modulator that modulates in-phase and quadrature-phase signals to produce a modulated signal;

a phase tracking subsystem that is responsive to the quadrature modulator to produce a phase signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal;

an amplitude tracking subsystem that is responsive to the quadrature modulator to produce an amplitude signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal, wherein the amplitude tracking subsystem comprises an automatic gain control subsystem that is responsive to the modulated signal to produce the amplitude signal;

an amplifier having a signal input, an amplitude control input and an output, wherein the signal input is responsive to the phase signal and the amplitude control input is responsive to the amplitude signal;

wherein the phase tracking subsystem comprises a phase locked loop that includes a controlled oscillator having a controlled oscillator output that produces the phase signal and wherein the quadrature modulator is included within the phase locked loop; and

wherein the automatic gain control subsystem further comprises:

a first envelope detector that is responsive to the modulated signal;

a second envelope detector that is responsive to the phase locked loop; and

a comparator that is responsive to the first and second envelope detectors to produce the amplitude signal.

~~14.~~ ⁸ (Previously Presented) A modulation system comprising:

a quadrature modulator that modulates in-phase and quadrature-phase signals to produce a modulated signal;

a phase tracking subsystem that is responsive to the quadrature modulator to produce a phase signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal;

an amplitude tracking subsystem that is responsive to the quadrature modulator to produce an amplitude signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal, wherein the

amplitude tracking subsystem comprises an automatic gain control subsystem that is responsive to the modulated signal to produce the amplitude signal;

an amplifier having a signal input, an amplitude control input and an output, wherein the signal input is responsive to the phase signal and the amplitude control input is responsive to the amplitude signal;

wherein the phase tracking subsystem comprises a phase locked loop that includes a controlled oscillator having a controlled oscillator output that produces the phase signal and wherein the quadrature modulator is included within the phase locked loop

wherein the automatic gain control subsystem further comprises:

a first envelope detector that is responsive to the modulated signal;

a second envelope detector that is responsive to the amplifier; and

a comparator that is responsive to the first and second envelope detectors to produce the amplitude signal.

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15. (Previously Presented) A modulation system comprising:
a quadrature modulator that modulates in-phase and quadrature-phase signals to produce a modulated signal;

a phase tracking subsystem that is responsive to the quadrature modulator to produce a phase signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal;

an amplitude tracking subsystem that is responsive to the quadrature modulator to produce an amplitude signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal;

an amplifier having a signal input, an amplitude control input and an output, wherein the signal input is responsive to the phase signal and the amplitude control input is responsive to the amplitude signal;

wherein the phase tracking subsystem comprises a phase locked loop that includes a controlled oscillator having a controlled oscillator output that produces the phase signal and wherein the quadrature modulator is included within the phase locked loop; and

wherein the amplitude tracking subsystem further comprises an envelope detector that is responsive to the modulated signal to produce the amplitude signal.

~~3~~
~~16.~~ (Original) A system according to Claim ~~10~~ wherein the phase tracking system further comprises a limiter between the quadrature modulator and the phase locked loop.

~~4~~
~~17.~~ (Original) A system according to Claim ~~10~~ further comprising:
a power amplifier that is responsive to the output of the amplifier having a signal input, an amplitude control input and an output; and
a transmit antenna that is responsive to the power amplifier.

~~5~~
~~18.~~ (Original) A system according to Claim ~~10~~ further comprising a transmit antenna that is responsive to the output of the amplifier and a user interface that generates the in-phase and quadrature signals in response to user input, to provide a wireless communications terminal.

~~6~~
~~19.~~ (Original) A system according to Claim ~~10~~ wherein the amplifier is a power amplifier.

20-27. (Cancelled)

~~10~~
~~28.~~ (Previously Presented) A modulation method comprising:
modulating in-phase and quadrature signals to produce a modulated signal;
producing a phase signal from the modulated signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal using a phase locked loop that includes a controlled oscillator having a controlled oscillator input, a controlled oscillator output and a feedback loop between the controlled oscillator input and the controlled oscillator output, the feedback loop including a mixer that is responsive to a local oscillator, wherein the modulating is performed in the feedback loop between the controlled oscillator output and the mixer, between the local oscillator and the mixer, or between the mixer and the controlled oscillator input;
producing an amplitude signal from the modulated signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal; and
amplifying the phase signal at a gain that is varied in response to the amplitude signal.

29. (Cancelled)

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30. (Original) A method according to Claim 28 wherein the producing an amplitude signal from the modulated signal comprises automatic gain controlling the modulated signal to produce the amplitude signal. 10

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31. (Previously Presented) A modulation method comprising:
modulating in-phase and quadrature signals to produce a modulated signal;
producing a phase signal from the modulated signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal using a phase locked loop that includes a controlled oscillator having a controlled oscillator output, wherein the modulating is performed within the phase locked loop;
producing an amplitude signal from the modulated signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal;
amplifying the phase signal at a gain that is varied in response to the amplitude signal;
wherein the producing an amplitude signal from the modulated signal comprises automatic gain controlling the modulated signal to produce the amplitude signal; and
wherein the automatic gain controlling comprises:
envelope detecting the modulated signal;
envelope detecting a signal in the phase locked loop; and
comparing the envelope detected modulated signal and the envelope detected signal in the phase locked loop to produce the amplitude signal.

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32. (Previously Presented) A modulation method comprising:
modulating in-phase and quadrature signals to produce a modulated signal;
producing a phase signal from the modulated signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal using a phase locked loop that includes a controlled oscillator having a controlled oscillator output, wherein the modulating is performed within the phase locked loop;

producing an amplitude signal from the modulated signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal;

amplifying the phase signal at a gain that is varied in response to the amplitude signal;

wherein the producing an amplitude signal from the modulated signal comprises automatic gain controlling the modulated signal to produce the amplitude signal; and

wherein the automatic gain controlling comprises:

envelope detecting the modulated signal;

envelope detecting the amplified phase signal; and

comparing the envelope detected modulated signal and the envelope detected amplified phase signal to produce the amplitude signal.

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23. (Previously Presented) A modulation method comprising:

modulating in-phase and quadrature signals to produce a modulated signal;

producing a phase signal from the modulated signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal using a phase locked loop that includes a controlled oscillator having a controlled oscillator output, wherein the modulating is performed within the phase locked loop;

producing an amplitude signal from the modulated signal that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal;

amplifying the phase signal at a gain that is varied in response to the amplitude signal; and

wherein the producing an amplitude signal from the modulated signal comprises: envelope detecting the modulated signal to produce the amplitude signal.

12 10
24. (Original) A method according to Claim 28 further comprising limiting the modulated signal, and wherein the applying the modulated signal to a phase locked loop comprises applying the limited modulated signal to a phase locked loop that includes a controlled oscillator having a controlled oscillator output that produces the phase signal.

~~13~~
~~35.~~ (Original) A method according to Claim ~~28~~ ¹⁰ further comprising:
transmitting the amplified phase signal.

~~14~~
~~36.~~ (Original) A method according to Claim ~~35~~ ¹³ further comprising:
generating the in-phase and quadrature signals in response to user input, to provide a
wireless communications method.

37-38. (Cancelled)